

WHAT IS CLAIMED IS

1. A molding die cleaning sheet disposed between a first mold and a second mold of a molding die having the pair of the first mold and the second mold for cleaning an inside of the molding die, comprising:

a cleaning sheet main body that covers an entire mating surface of the molding die when disposed between the first mold and the second mold, the cleaning sheet main body being formed with first through holes corresponding to the cavities of the molding die, recesses corresponding to air vents at each corner of the cavities, second through holes corresponding to the pots of the molding, and slits corresponding to the runners of the molding die; and

a reinforcing member for supporting the cleaning sheet main body at the peripheral edge thereof.

2. A method of manufacturing a semiconductor device using a molding die cleaning sheet that covers an entire mating surface of a molding die having a pair of a first mold and a second mold, the method comprising the steps of:

providing the molding die cleaning sheet having:  
a cleaning sheet main body formed with first through

holes corresponding to the cavities of the molding die, recesses corresponding to the air vents at each corner of the cavities, and second through holes corresponding to the pots of the molding die; and a reinforcing member for supporting the cleaning sheet main body at the peripheral edge thereof;

disposing the cleaning sheet main body over the entire mating surface of the molding die while corresponding the first through holes of the cleaning sheet main body to the cavities, the recesses to the air vents and the second through holes to the pots respectively and clamping the cleaning sheet main body by the first mold and the second mold;

supplying a cleaning resin from the pots to the cavities and passing the cleaning resin through the second and the first through holes of the cleaning sheet main body thereby filling the resin in the cavities; and

hardening the cleaning resin and then releasing the cleaning resin and the cleaning sheet main body from the molding die.

3. A method of manufacturing a semiconductor device using a molding die cleaning sheet that covers an entire mating surface of a molding die having a pair

of a first mold and a second mold, the method comprising the steps of:

providing the molding die cleaning sheet having: a cleaning sheet main body formed with first through holes corresponding to the cavities of the molding die, recesses corresponding to the air vents at each corner of the cavities, and slits corresponding to the runners of the molding die; and a reinforcing member for supporting the cleaning sheet main body at the peripheral edge thereof;

disposing the cleaning sheet main body over the entire mating surface of the molding die while corresponding the first through holes of the cleaning sheet main body to the cavities, the recesses to the air vents and the slits to the runners respectively, and clamping the cleaning sheet main body by the first mold and the second mold;

supplying a cleaning resin by way of the runners to the cavities and passing the cleaning resin through the slits and the first through holes of the cleaning sheet main body thereby filling the resin in the cavities; and

hardening the cleaning resin and then releasing the cleaning resin and the cleaning sheet main body from the molding die.

4. A method of manufacturing a semiconductor device using a molding die cleaning sheet that covers an entire mating surface of a molding die having a pair of a first mold and a second mold, the method comprising the steps of:

providing the molding die cleaning sheet having: a cleaning sheet main body formed with first through holes corresponding to the cavities of the molding die, recesses corresponding to the air vents at each corner of the cavities, and slits corresponding to a portion of the runners of the molding die; and a reinforcing member for supporting the cleaning sheet main body at the peripheral edge thereof;

disposing the cleaning sheet main body over the entire mating surface of the molding die while corresponding the first through holes of the cleaning sheet main body to the cavities, the recesses to the air vent, the slits to the portion of the runners respectively, and clamping the cleaning sheet main body by the first mold and the second mold;

supplying a cleaning resin by way of the runners to the cavities and passing the cleaning resin through the slits and the first through holes of the cleaning sheet main body thereby filling the resin in the

cavities; and

hardening the cleaning resin and then releasing the cleaning resin and the cleaning sheet main body from the molding die.

5. A method of manufacturing a semiconductor device using a molding die cleaning sheet that covers an entire mating surface of a molding die having a pair of a first mold and a second mold, the method comprising the steps of:

providing the molding die cleaning sheet having: a cleaning sheet main body formed with first through holes corresponding to the cavities of the molding die, recesses corresponding to the air vents at each corner of the cavities, slits corresponding to the runner of the molding die, and second through holes corresponding to the pots of the molding die; and a reinforcing member for supporting the cleaning sheet main body at the peripheral edge thereof;

disposing the cleaning sheet main body over the entire mating surface of the molding die while corresponding the first through holes of the cleaning sheet main body to the cavities, the recesses to the air vents, the slits to the runners, and the second through holes to the pots respectively, and clamping

the cleaning sheet main body by the first mold and the second mold;

supplying a cleaning resin from the pots by way of the runners to the cavities, and passing the cleaning resin through the second through hole, the slits and the first through holes of the cleaning sheet main body thereby filling the resin in the cavities; and

hardening the cleaning resin and then releasing the cleaning resin and the cleaning sheet main body from the molding die.

6. A method of manufacturing a semiconductor device comprising the steps of:

(a) providing a first mold having a main surface, and a second mold having a main surface and having a first concaved portion on the main surface;

(b) providing a resin containing plural particles;

(c) providing a sheet having plural openings each having a diameter larger than that of the particle and through holes each having a diameter larger than that of the plural openings;

(d) opposing and contacting the main surface of the first mold and the main surface of the second mold

to each other, and disposing the sheet between the main surface of the first mold and the main surface of the second mold to position the through holes at the openings surrounded with the main surface of the first mold and the first concaved portion;

(e) after the step (d), injecting a resin to an inside of the openings surrounded with the main surface of the first mold and the first concaved portion;

(f) after the step (e), removing the sheet on the main surface of the first mold and the second mold and the resin;

(g) after the step (f), opposing and contacting the main surface of the first mold and the main surface of the second mold to each other and disposing a semiconductor chip to the inside of the opening surrounded with the main surface of the first mold and the first concaved portion; and

(h) after the step (g), filling an encapsulating resin to the inside of the opening surrounded with the main surface of the first mold and first concaved portion thereby encapsulating the semiconductor chip.

7. A method of manufacturing a semiconductor device

according to claim 6, wherein the sheet is a non-woven fabric, paper or net-like material.

8. A method of manufacturing a semiconductor device according to claim 6, wherein the sheet is formed with plural openings each having a diameter larger than that of the particle over an entire surface of the sheet.

9. A method of manufacturing a semiconductor device according to claim 6, wherein the second die has a second concaved portion on the main surface and the step (e) comprises a step of disposing a resin containing the plural particles to the inside of the second concaved portion and a step of applying heat and pressure to the resin and charging the same to the inside of the openings.

10. A method of manufacturing a semiconductor device according to claim 6, wherein the particles are formed of silica.

11. A method of manufacturing a semiconductor device according to claim 6, wherein the resin portion of the resin containing the particles is formed of a melamine



each having a diameter larger than that of the particle and through holes each having a diameter larger than that of the plural openings;

(d) opposing and contacting the main surface of the first mold and the main surface of the second mold and disposing the sheet between the main surface of the first mold and the main surface of the second mold to situate the first and the second concaved portions in the region where the through holes are disposed;

(e) after the step (d), injecting a resin to the inside of the openings surrounded with the main surface of the first mold and the first and second concaved portions;

(f) after the step (e), removing the sheet and the resin on the main surfaces of the first mold and the second mold;

(g) after the step (f), opposing and contacting the main surface of the first mold and the main surface of the second mold, disposing a first semiconductor chip at the inside of the opening surrounded with the main surface of the first mold and the first concaved portion, and disposing a second semiconductor chip to the inside of the opening surrounded with the main surface of the first mold and the second concaved portion; and

(h) after the step (g), filling an encapsulating resin to the inside of the opening surrounded with the main surface of the first mold and the first concaved portion and encapsulating the semiconductor chip.

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